

Re: On the nature of implication (was: Logic Hounds)

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- *From:* herbzet <herbzet@xxxxxxxx>
 - *Date:* Wed, 14 Jan 2009 18:02:27 -0500
-

Tron wrote:

Hi,

"herbzet" <herbzet@xxxxxxxx> skrev i melding
news:4965B334.FE03E61B@xxxxxxxxxxxxxx

....

However, as I also said, the articles relating to implication are in constant flux, and are generally reprehensible trash, guaranteed to generate in the mind of the innocent reader the usual misapprehensions that have been common to the field for a hundred years or so.

Well, it certainly reflects the misunderstandings we set out to correct.

I've been imprecise again – the paradoxes you quoted are technical ones, inside of logic, so to speak.

Oh, please. Don't give me "that's just a problem for technicians" again, please. It is not the case that people who don't know what they're talking about have more insight than the people who do.

I could of course simply ignore your eristic sophistry (which is classical greek for "really, really bad argumentation"), but then I couldn't demonstrate how our exchanges get inflated by having to use up half of any posting to refute and rebut. Or, to put it another way, I am glad to see

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that you are well again ...

The "problem for technicians" refers to something in an old thread.

The article on the "paradoxes of material implication" is precisely about how the relation of material implication fails to match up with the natural language use of implication.

Part of the problem is that the standard formal languages for propositional logic and first-order logic, amazingly, do not have a symbol to represent the relation of implication!

What is pressed into service is ' \rightarrow ', which represents the much weaker relation of material implication, which, as I mentioned before, is not a sort of implication at all.

Imagine that — the standard formalizations of logic don't have a symbol for the central concept of implication! No wonder people get confused on the subject.

The nearest thing we have is a symbol in the meta-language of the formalism: the turnstile symbol ' \models ' which stands for semantic entailment.

Repeat: the turnstile is **not** a part of the formalism, it is used to talk **about** the formalism.

Someone makes up some axioms, and after that, the work is to explicate the consequences of these axioms.

The consequences of these axioms are more or less contained in the axioms, and it is the task of more or less well trained worker bees to gather all these consequences in a big heap. They do not, however, step outside the limits inherent in the axioms.

This is not really a description of what logicians do, or at least it doesn't come close to exhausting what logicians do. But this is not really the point at issue.

My main interest centres around the axioms and the reasons for adopting or rejecting them; in this case, it was the relationship between theories of language and of meaning on one side, and logic on the other. I am definitely not very skilled in the techniques of logic when compared to the average in sci-logic (deducting for Gödel Crusaders); a notch above the average layman, perhaps; and so I should perhaps not try to compare. OTOH I am fairly competent in theories of language and meaning, and since Frege is both one of the fathers of modern logic and the father of modern language philosophy, some overlap is of course unavoidable.

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My knowledge of Frege is slight and second-hand.

Wrt. ignoramii having insight, there is of course the Hofstadterian "jootsing" ("jumping out of the system") to consider. Not to say that people who don't know what they're talking about have more insight than the people who do; however, a perspective from the outside of a system is not always, per se and per definition and ab ovo and in and of itself entirely without merit.

Ok. Even a blind sow will occasionally find an acorn. My point is that in examining the relation between the formalized logic and the natural language it is intended to represent, having a solid understanding of the formalism is not an impediment to examining the relationship.

Being technically competent does not make one stupid or unimaginative.

I'm sure any number of sci.logic regulars could contribute that, if there was enough time – just think of me as someone who is here to relieve you of that burden. In competition with J.Jones, if you will.

Well, that's a tough row to hoe, granted. I'm sure I speak for all of us when I say that we appreciate your efforts, and JJ's, to bring a wider perspective to the ng.

But seriously, we need more actually competent philosophy-of-logic type persons here, imho. Enough with the set theory, already.

.....

However, I find both "my" problem and "my" solution mentioned:

<http://en.wikipedia.org/wiki/Entailment>

"....The use of the operator is stipulated by logicians, and, as a result, can yield some unexpected truths.

By "unexpected truths" they mean "bullshit".

I think we agree that this may be the chief ingredient of the problem.

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....> It is incorrect to think that "material implication" is a sort of

implication It's that simple. The damn thing is misnamed in a horribly misleading way, and everybody is hypnotized by the name. It is assumed that since it is named "material implication" it /must be/ some kind of implication. But it isn't some kind of implication, though millions of people mistakenly think that it is.

Noted.

Not the main problem in my native language, though, where it is known as a conditional (which, btw., is the original Fregean term for it: "Bedingung", i.e. condition)

Please see <http://www.iep.utm.edu/l/logcon.htm> and then, if you have the stomach for a somewhat more technical article, read <http://www.iep.utm.edu/l/logcon-m.htm> .

These are good articles.

Have glanced, will glean.

However:

Wrt, the second:

I don't know how it affects your powers of critical reading as soon as articles contain a sufficient quantity of typographical symbols for logical operatives, but did you (or did you not) raise an eyebrow at "...The symbols '~', '&', 'v', and '?' correspond to the English words 'not', 'and', 'or' and 'if...then', respectively. ..."? I mean, what liberty does a logician have to equate symbols of logic with English words (if you are willing to consider the original problem when turned on its head)?

To reduce wear and tear on your pacemaker: I _know_ that nothing follows from this wrt. to logic. IMHO, however, such an article – rated "good" – contributes to the confusion between logic–english and english–english. What is a poor layman to believe, in the unlikely case that s/he stumbles over a text like this? So it's not just the insouciant amateurs at Wikipedia.

And wrt. the first:

Do you ever pause to think about what is actually said in an article like this? Allow me to quote :

"In order to simplify matters we take the logical consequence relation to hold for sentences rather than for abstract propositions, facts, state of affairs, etc. Correspondingly, logical consequence is a relation between a given class of sentences and the sentences that logically follow."

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Now, I have maintained, from the very first posting, that the MI is "...concerned with the logical consequence relation holding for sentences rather than for /.../ state of affairs...." (like causation). And this is the third sentence in another article rated "good". Admittedly, you have several times remarked on my slightly atavistic vocabulary, mode of expression and perhaps of thinking, and if you choose to take refuge behind these, be my guest. But this is more or less exactly what I have been saying from the go – then why all the polemics? Is the surface of words that opaque?

No. The IEP article says "logical consequence". You say "material implication", and say that the latter is concerned with the former. It's not.

Here's how material implication usually occurs in natural language:

- A) Mom's at home.
- B) Dad's not at home.

The first sentence does not imply the second, nor does the second imply the first. Knowing the truth of A does not allow us to rationally conclude anything about the truth of B, and vice versa.

However, when we have the additional information that

- C) Mom and Dad can't stand each other, so they're never at home at the same time.

then it does seem that A implies B. Knowing C, it certainly has the feel of logical force that A implies B.

But A does not imply B — in the presence of C as background information, A materially implies B. What *does* imply B is the conjunction of A and C. In the absence of C (or something similar) there's no reasonable way to conclude B from A.

In the presence of background information that everyone's aware of, some propositions seem to compel others by logical force, when by themselves they don't.

And that's how material implication actually occurs in natural language, for the most part.

On the sillier side:

"

(1') Some S are both M and P

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(2') Some S are P

/...../ Note that there is no interpretation of S, M, and P according to which the sentence that results from (1') is true and the resulting instance of (2') is false."

How about:

(1') Some cakes are both made of yeast and of flour

(2') Some cakes are made of yeast

Note that here is an interpretation of S, M, and P according to which the sentence that results from (1') is true and the resulting instance of (2') is false.

(The precondition of course being that M and P result in a _mixture_, which neither M nor P can constitute by themselves.)

Apart from that, I still fail to see how this is, again something different from the inflated bla-bla definition of relating the extensions of concepts to another mediated by the LoC. OK, it is a line-by-line explication in the best Fregean spirit, but it doesn't really give anything new over Aristotle.

Right. It is a rigorous formulation of the concept of implication, mainly in terms of classes taken extensionally, and of functions (ultimately to be reduced to classes as well).

It is a conservative formulation, nothing revolutionary.

But still, it is a much stronger formulation than that of material implication, which is basically just the denial of a conjunction: $\sim(A \ \& \ B)$ means exactly the same as $(A \ \rightarrow \ \sim B)$ or $(B \ \rightarrow \ \sim A)$.

For proposition A to imply proposition $\sim B$, it not sufficient merely that $\sim(A \ \& \ B)$ is true. For A to imply $\sim B$, it is necessary that $\sim(A \ \& \ B)$ be true /regardless of what propositions are uniformly substituted for the atomic propositions of A and of B/.

It is not sufficient that $\sim(A \ \& \ B)$ merely be true, a true material implication. The much stronger condition, that $\sim(A \ \& \ B)$ be true in *all* of its instances, is the necessary condition for the truth of "A implies $\sim B$ " or "B implies $\sim A$ "; i.e., for $A \models \sim B$ or $B \models \sim A$.

(I'm mostly thinking of propositional logic. To include first-order logic something a little fancier is needed, which is the substance of the second IEP article.)

And there's a whole page on "a formal consequence relation /being/ a consequence relation that is uniquely determined by the form of the sentences between which it holds", but not one word on what form actually is.

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Well, some particular forms are explicitly given — conjunctions, disjunctions, quantified forms, etc.

What is form ? (Use available blank line to insert succinct definition here:)

Heh, yeah — what is "form"? I'll venture the opinion that formulae are instances of forms of propositions. Sometimes.

What is the form of a sentence? (Use available blank line to insert succinct definition here:)

That's a job for Philosophy—Man!

—

hz

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